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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/634,484	08/08/2000	Siva Perraju Tolety	00-8005	5426

32127 7590 09/15/2004

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EXAMINER
VOLPER, THOMAS E

ART UNIT	PAPER NUMBER
2665	

DATE MAILED: 09/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/634,484	TOLETY, SIVA PERRAJU	
	Examiner	Art Unit	
	Thomas Volper	2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-69 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-7,9,11-20,22-30 and 32-69 is/are rejected.

7)☒ Claim(s) 8,10,21 and 31 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 3 and 4.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Oath/Declaration

1. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

The declaration states: "I believe I am the original, first *and joint* inventor". However, only one inventor has signed the declaration.

Claim Objections

2. Claim 2 is objected to because of the following informalities: In line 8, "larger portion the" should be changed to --larger portion of the--.

3. Claim 45 is objected to because of the following informalities: In line 8, "an amount time" should be changed to --an amount of time--.

4. Claim 49 is objected to because of the following informalities: In line 7, "second, test" should be changed to --second, test node--.

5. Claims 51, 59 and 64 are objected to because of the following informalities: The limitation "RFC 959" should be more descriptive and perhaps include the title of RFC 959, --File Transfer Protocol (FTP)--. Appropriate correction is required.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1, 2, 14-16, 24, 25, 36, 37 and 44-48 are rejected under 35 U.S.C. 102(e) as being anticipated by Klassen et al. (US 6,711,137).

Regarding claims 1, 14, 15, 24 and 36, Klassen discloses determining the amount of time it takes for information signals to traverse a communication path containing a plurality of nodes in at least one direction and determining an amount of bandwidth available in at least a portion of the communication path, based on the amount of time determined (col. 15, line 37 – col. 16, line 33). The workstation (22) represents a test node and the target station (24) represents the end of the communications path (see Figure 1). Since the communication network (20) may contain a plurality of nodes, there may be contained therein a first node, as recited in the present invention, through which the information signals travel.

Regarding claims 2, 16, 25 and 44, Klassen states that measurement of response time, which is used to determine bandwidth, includes measurement of device latency (col. 15, lines 45-48), which meets the limitation of signal propagation delay in a first node. In addition, Klassen states that a path between nodes may include multiple hops (col. 10, line 55 – col. 11, line 8). In this case, the device latency in a first node after a first hop, as well as the time to traverse the hop

between first and second nodes would need to be taken into account in determining the total bandwidth on the complete communication path.

Regarding claim 37, Klassen discloses communications network (20) in Figure 1 that may contain a plurality of nodes, as mentioned above. In order to reach the target station (24) at the end of the communication path being tested, there must be some segment of network connecting this target node to a previous first node disposed in the network.

Regarding claims 45-48, Klassen discloses sending information signals on a communication path between a workstation (22) containing a bandwidth-monitoring device that represents a test node, and a target station (24) that represents the end of the communications path (col. 15, line 37 – col. 16, line 33; see Figure 1). Since the communication network (20) may contain a plurality of nodes or hops (col. 10, line 55 – col. 11, line 8), there may be contained therein a first node, as recited in the present invention, through which the information signals travel. Klassen discloses that the information signals may be a set of short and long pings from the test station to the target station wherein the test station keeps track of round trip response times (col. 9, lines 15-59). Derived from the ping times are response time parameters including apparent device latency, which meets the limitation of propagation delay according to the present invention. Also derived from the ping times is an apparent bandwidth for the total communication path, which is related to network throughput bandwidth via a hop count factor that is based on the latencies through any intermediate devices in the communication path (col. 10, line 55 – col. 11, line 8). Thus, the device latency in a first node after a first hop, as well as the time to traverse the hop between first and second nodes would need to be taken into account in determining the total bandwidth on the complete communication path.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 3-7, 9, 11-13, 17-20, 22, 23, 26-30, 32-44 and 49-69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klassen et al. (US 6,711,137) in view of Vaid et al. (US 6,502,131).

Regarding claims 3, 17, 26, 39 and 40, Klassen fails to expressly disclose that the first node is located at a Point of Presence. Vaid discloses that a first node (413) in a communication path being tested by a traffic management system (405) may be a router, which meets the limitation of a Point of Presence (see Figure 4). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have a router as the first node. One of ordinary skill in the art would have been motivated to do this in order to monitor bandwidth capacities between users of a dedicated line and a connection point to the Internet at their Internet Service Provider (ISP).

Regarding claims 4, 7, 18, 27 and 30, Klassen discloses sending a set of short and long pings from a test station to a target station wherein the test station keeps track of round trip response times (col. 9, lines 15-59). As stated above, the combination of Klassen in view of Vaid provides a system wherein a communication path may be monitored between a workstation (22) that contains a bandwidth monitoring device, which meets the limitation of a test node, and

some target node (24) (second node) as defined by Klassen, wherein a router (first node) is an intermediate node in the communication path. Derived from the ping times are response time parameters including apparent device latency, which meets the limitation of propagation delay according to the present invention. Also derived from the ping times is an apparent bandwidth for the total communication path, which is related to network throughput bandwidth via a hop count factor that is based on the latencies through any intermediate devices in the communication path (col. 10, line 55 – col. 11, line 8).

Regarding claims 5, 19 and 28, Klassen discloses that device latency contributes to a loss of bandwidth, as mentioned above. Since device latency is the total delay at a device, this includes any queuing delays.

Regarding claims 6, 20 and 29, Klassen discloses that the user may choose which ping packet size to use (col. 9, line 24). Klassen also discloses that in order to perform network capacity limit calculations, the user must be basing the calculations on some current usage capacity, i.e. a predetermined bandwidth (col. 8, line 60 – col. 9, line 10).

Regarding claims 9, 22 and 32, Klassen discloses sending short pings of 64 bytes followed by long pings of 1464 bytes (col. 9, lines 36-44).

Regarding claims 11, 12, 33 and 34, Klassen discloses using ping messages, as described above, to derive response time parameters. Ping messages are diagnostic messages that are a function belonging to the Internet Control Message Protocol (ICMP) and meet the limitation of an error-provoking signal.

Regarding claims 13, 23 and 35, Klassen discloses that the bandwidth-monitoring device may reside on a workstation (22) (col. 7, lines 56-65), which meets the limitation of presenting bandwidth availability results to a user.

Regarding claim 38, Klassen fails to expressly disclose that the network operates in accordance with either Frame Relay (FR) technology or Asynchronous Transfer Mode (ATM) technology. Vaid discloses a traffic management system that may operate in a FR or ATM network (col. 7, lines 7-23). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to implement the bandwidth monitoring system of Klassen in either a FR or ATM network. One of ordinary skill in the art would have been motivated to do this in order to service a wider variety of communications networks.

Regarding claim 41, the combination of Klassen in view of Vaid provides a router as a first node located between the target node of Klassen (second node) and workstation of Klassen (second node). A router is essentially a multiplexing/demultiplexing device as it is capable of sending multiple signals on one line.

Regarding claim 42, the combination of Klassen in view of Vaid clearly shows a further path connecting the router (first node) to the Internet via a further path, wherein the second node is also coupled to the Internet via the at least one communication path, first node and further communication path (see Figure 4 of Vaid).

Regarding claim 43, the combination of Klassen in view of Vaid provides for the bandwidth-monitoring device of Klassen to be implemented in an ISP network arrangement as shown in Figure 4 of Vaid. Vaid shows that the router (413) provides a dedicated line to the client side. Although this connection is not expressly described as an ADSL or ISDN

technology, it is well known in the art for a client of an ISP to use either ADSL or ISDN technologies to connect to the Internet at the ISP. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use either ADSL or ISDN in the communications network of Klassen in view of Vaid. One of ordinary skill in the art would have been motivated to do this in order to apply the bandwidth monitoring capability of Klassen to a very common ISP network connection.

Regarding claims 49, 58, 63 and 67, Klassen discloses a communication path coupling a first node (24) ("apparatus" in claim 58 and simply "node" in claim 63) and second, test node (22) (simply "node" in claim 58 and "computer" in claim 63) that comprises a communication network (20) that may contain a plurality of nodes. Klassen discloses determining an amount of time taken for the information to be received in the first node, the amount of information received in the first node and determining a first bandwidth available in the communication path based on the determined amount of time and determined amount of information received (col. 15, line 37 – col. 16, line 33). Klassen fails to expressly disclose a router disposed between the first node and second, test node. Vaid discloses a router (413) disposed in a communication path being tested by a traffic management system (405) (see Figure 4). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have a router on in the communication path between the bandwidth-monitoring device in workstation (22) and target station (24) of Klassen. One of ordinary skill in the art would have been motivated to do this in order to monitor bandwidth capacities between users of a dedicated line and a connection point to the Internet at their Internet Service Provider (ISP).

Regarding claims 50, 51, 59 and 64, Klassen discloses sending File Transfer Protocol (FTP) files for determining the bandwidth on the communication path (col. 10, lines 21-26; col. 10, line 60 – col. 11, line 10).

Regarding claims 52, 53, 60, 61, 65 and 66, Klassen discloses that a user may specify the size of the number of bytes in the pings sent from end to end (col. 9, lines 15-17). Klassen also discloses a ping test from end-to-end, i.e. between workstation (22) and target station (24), to determine a throughput bandwidth (col. 10, line 55 – col. 11, line 10). Additionally, Figure 6 shows a chart of bandwidth tests wherein the bandwidth is displayed in kilobits per second. Thus, the bytes of the ping messages must have been converted to a number of bits to display the bandwidth in this fashion. In order to determine how many kilobits were received for a particular unit of time, the receiving end would have to determine the beginning and end of the ping message being received in order to know how long it took to receive the ping message.

Regarding claims 54-56, 62 and 68, Klassen discloses that the process mentioned above for determining a bandwidth on the communication path may be performed in both directions, i.e. 2-way ping streams (col. 10, lines 21-26).

Regarding claim 57, there must be bandwidth available when performing the pinging functions mentioned above, otherwise the pings could not be sent.

Regarding claim 69, the router provided by Vaid is located at an ISP, which meets the limitation of being located at a Point of Presence in the communication system.

Allowable Subject Matter

10. Claims 8, 10, 21 and 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter:

Claims 8, 21 and 31 would be allowable over the prior art of record since the cited references taken individually or in combination fail to particularly disclose determining the available bandwidth on a communication path according to the specific formula:

$$BW_{POP\text{-}CPE} = (PS) / (RTT_{T\text{-}CPE} - ((PS) / BW_{T\text{-}POP}) - 2 * MQD)$$

Although the closest prior art, Klassen et al. (US 6,711,137), discloses using all of these parameters in certain calculations, Klassen et al. fails to disclose a bandwidth calculation using these parameters in this particular arrangement.

Claim 10 would be allowable over the prior art of record since the cited references taken individually or in combination fail to particularly disclose a step that comprises reducing the predetermined number of hop counts specified by the information included in each second signal, based on a number of hops included in the second, larger portion of the at least one communication path and wherein the second node receives each second signal and performs the step comprising further reducing the predetermined number of hop counts specified by the information included in that second information signal. The closest prior art of record, Klassen et al. (US 6,711,137), provides for using a hop count factor in determining a network throughput

bandwidth. However, Klassen et al. fails to demonstrate the specific steps of reducing the hop count in a forwarding step, and then further reducing the hop count at the second node.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

McKee et al. (US 5,477,531) Method and Apparatus for Testing a Packet-Based Network

13. Any inquiry concerning this communication, or earlier communications from the examiner should be directed to Thomas Volper whose telephone number is (571) 272-3151. The examiner can normally be reached between 8:30am and 5:00pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu, can be reached at (571) 272-3155. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2600.

Thomas E. Volper

TEV

September 9, 2004

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